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ABSTRACT

Underrepresentation of women in higher status, traditionally male occupations has been attributed to sex-role socialization and to discrimination. Female students entering traditionally male professions may suffer many of the same pressures that have prevented other women from entering these fields. Undergraduate women (N=64) and men (N=21) in engineering, management, and pre-medicine programs completed a questionnaire which included measures of personality variables and external factors related to achievement and measures of current achievement. Also included were measures of expectations of future success, aspirations, and five stress/health measures. The means for women and for men were similar on all measures; but correlations with expectations, aspirations, and the stress/health measures appeared to differ by sex. Prediction equations for these variables for women were also tested. Current achievement was the best predictor for expectations and aspirations. Personality measures were more important and external factors slightly less important for aspirations than for expectations. The combined predictors accounted for a significant amount of the variance in each of the predicted variables. Many of the predictors that were related to one of the stress/health measures were unrelated or inversely related to another, indicating different underlying processes. (Author/NRB)

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WOMEN ENTERING TRADITIONALLY MALE PROFESSIONS: ACHIEVEMENT-RELATED VARIABLES AND STRESS

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Women Entering Traditionally Male Professions:

Achievement-related Variables and Stress

Research has demonstrated that the underrepresentation of women in higher status, traditionally male occupations can be attributed both to sex-role socialization, which reduces the number of women who are willing and able to assume the positions, and to discrimination, which limits the opportunities of able women who aspire to these positions (cf. O'Leary, 1974; Terborg, 1977). Our purpose in the present research was to extend consideration to students who have gained ertry to these traditionally male professions yet who may suffer many of the same pressures that have prevented other women from entering these professions. Canter (1979) investigated achievement-related expectations and aspirations in a general sample of college women; she found expectations for success, anticipated consequences of success, sex-role conception, perceived discrimination, female peer expectations, grade point average, and ability to be correlated with occupational and educational aspirations. In general, awareness or acceptance of achievement as inappropriate for women was related to lower aspirations in this study. We investigated similar variables in women preparing for traditionally male professions because achievement in these fields is especially deviant for women in our society, and we included several stress measures for the same reason.

Method

As part of a larger study, a questionnaire was administered to 64 women and a small comparison group of men (21) who were students

in the engineering, management, and pre-medicine programs at a small, highly selective university. The questionnaire included standardized personality scales that have been related to achievement: achievement motivation (Mehrabian & Bank, 1978); fear of success (Zuckerman & Allison, 1976); social self-esteem (Helmreich, Stapp, & Ervin, 1978); and sex-role orientation (Spence, Helmreich, & Stapp, 1974), scored as self-perceptions of socially desirable masculine traits and socially desirable feminine traits. External factors hypothesized to be related to achievement and stress also were assessed: perceptions of discrimination against women in current work role (student); attitudes of significant others toward one's choice of curriculum; and social support currently received from professors, same-sex colleagues, opposite-sex colleagues, same-sex friends, opposite-sex friends, dates, parents, and other relatives (modified from Caplan et al., 1975). Current achievement was measured in terms of grade point average, self-perceptions of competence in one's field, and self-perception of success relative to others (Scanzoni, 1978). These variables were tested as predictors of expectations of future success in work (Scanzoni, 1978). The same variables plus expectations of future success were tested as predictors of level of current and future aspirations (Scanzoni, 1978). All of these variables, including expectations and aspirations, plus the discrepancy between current aspiration and perceived success and the discrepancy between future aspiration and expected success, were tested as predictors of five stress/health measures. The stress/health measures were a symptom checklist (Indik, Slesinger, & Seashore, 1964), an anxiety-depression-irritation index (Caplan et al., 1975), the number of medical visits an illness inventory (Masuda, Wyler, & Holmes, 1970), and a one-item rating of stress associated with work during the semester.

Results and Discussion

All scales constructed by the authors had acceptable internal consistency as indicated by Cronbach alphas ranging from .5 (for very short scales) to .9. Because the main analyses were stepwise multiple regressions, results are presented only for those subjects who completed all measures. The male sample is very small and may be less representative that the female sample; results are presented for comparison with the results for women, but no direct tests for sex differences were conducted. Examination of the mean responses for women and men (in the table below) indicates that the two groups were similar in their levels on the variables of interest. Results of the correlation and regression analyses are presented on the next page.

	WOMEN		MEN	
VARIABLES (scoring in parentheses)	M	SD	M	SD
Achievement motive (-152 to 152)	68.98	27.28	64.18	32.68
Fear of success (27 to 189)	102.96	14.93	101.88	9.66
Social self-esteem (32 to 160)	87.83	16.75	86.53	15.38
Masculinity (5 to 115)	86.02	8.90	85.76	10.21
Femininity (18 to 90)	71.09	7.20	68.76	7.99
Discrimination (5, for, to 25, against women)	17.13	2.86	18.65	2.69
Disapproval of curriculum (1 to 5)	1.71	.56	1.85	.52
Social support (4 to 16)	12.37	1.32	11.94	1.42
GPA (on 4-point scale)	3.09	.55	2.38	.46
Perceived competence (4 to 20)	15.85	2.04	16.18	2.01
Perceived success (1 to 6)	3.30	1.21	3.00	1.17
Expectation of success (1 to 6)	4.09	.94	3.88	.93
Aspirations (2 to 12)	9.28	1.49	8.82	1.51
Current aspir.-success (0 to 5)	1.24	1.10	1.18	.88
Future aspir.-expectation (0 to 5)	.65	.85	.76	.75
Symptoms (15 to 45)	23.02	3.91	22.18	3.52
AnxDepIrr (20 to 80)	36.52	8.08	38.12	7.40
Dr.Visits (number last semester)	1.59	2.21	1.35	1.93
Illnesses (weighted: mildX1, mod.X2, sev.X3)	10.30	5.22	10.12	7.18
Stress rating (1 to 9)	5.85	1.83	6.00	2.60

Comparison of the correlation and regression analyses indicates that some predictors that exhibited high correlations with a predicted variable are not independently related to that variable. For example, when perceived success has been added to prediction equation for Aspirations, it is held constant (or controlled for) and GPA and Expectation would not improve the prediction equation. Furthermore, some variables

PREDICTORS	PREDICTED VARIABLES: Expectation		Aspiration		Symptoms		AnxDepIrr		Dr.V[illegible]		[illegible]nesses		Stress	
	r	beta	r	beta	r	beta	r	beta	r	beta	r	beta	r	beta
WOMEN (n=46)														
Achievement motive	.29		.44*	.27*	-.33*	-.16	-.16		-.20	-.21	-.34*		.11	.26
Fear of success	-.31*		-.39*	-.22*	.20	.20	-.02		-.31*	-.50*	.20	.20	-.07	
Social self-esteem	.12		-.02	-.21	-.24		-.33*	-.21	.02		-.27		-.23	-.52*
Masculinity	.12	-.18	.17		-.30*	-.20	-.26		.02		-.39*	-.33*	-.01	.39*
Femininity	.20		-.20	-.38*	-.34*		-.34*	-.27*	-.16		.15	.35*	.07	.17
Discrimination	-.17	-.28*	-.20	-.26	-.04		-.12		-.02		-.09		-.16	
Disapproval of curric.	.01		-.01		.11		.53*	.45*	-.18	-.33*	.31*	.19	.18	
Social support	.21	.18	-.11		-.03		-.26		.05		-.17	-.20	-.00	
GPA	.33*	-.38	.48*		-.28		-.11		-.41*		-.12	-.17	.05	.66*
Perceived competence	.47*	.41*	.55*	.25	-.28		-.20		-.13		.33*		.06	-.39
Perceived success	.47*	.68*	.51*	.43*	-.34*		-.20		-.45*	-.44*	-.15		-.10	-.87*
Expectation			.46*		-.19		-.04		-.28	-.17	-.08		.37*	.71*
Aspirations					-.10		.12		-.13		-.27	-.00	.21	
Current aspir.-success					.35*	.40*	.30*		.42*		-.10		.25	.27
Future aspir.-expect.					.07		.13		.17		-.06		-.22	
ADJUSTED R^2		.37*		.64*		.23*		.35*		.44*		.21*		.48*
MEN (n=17)														
Achievement motive	.59*		.54*		.30		-.16		.45		-.35		.31	
Fear of success	-.40		-.18		.15		.28		-.24		.29		.11	
Social self-esteem	.42		.58*		.30		-.27		.49*		.06		.33	
Masculinity	.53*		.71*		.29		-.20		.42		.05		.30	
Femininity	.23		.23		.47		-.04		.36		.23		.70*	
Discrimination	-.04		.41		.15		.11		-.08		.02		.12	
Disaporoval of curric.	-.10		-.17		-.15		-.06		-.15		-.14		.26	
Social support	-.11		.33		.21		-.27		.15		.07		.03	
GPA	.02		.27		-.28		-.11		-.24		.06		-.46	
Perceived competence	.35		.75*		-.05		-.33		.03		-.05		.07	
Perceived success	.46		.67*		-.08		-.33		.28		-.08		-.25	
Expectation			.48*		.10		-.04		.27		.06		.13	
Aspirations					.11		.07		.15		.07		.24	
Current aspir.-success					-.03		.55*		-.44		.17		.44	
Future aspir.-expect.					.25		.06		.06		-.02		.19	

Note. The standardized beta coefficients are are taken from the regression equation at the point where the next predictor entered into the equation would decrease the Adjusted R^2. The Adjusted R^2 is a conservative estimate of the percent of variance in the predicted variable that is accounted for by the predictors in the equation; it is especially appropriate when sample size is small. Each beta was tested by the standard regression method to determine whether it would add a significant increment to R^2 if all the other predictors in the equation had been added first.

*p < .05 or better.

that are not significantly correlated with a predicted variable do account for some of the variance in that variable when other predictors have been controlled for by prior entry into the prediction equation. See, for example, Stress.

The subject's perception of her current success relative to others is the best predictor of both Expectation of future success and of level of success desired currently and in the future (Aspirations). Considering the multivariate prediction, other variables concerning current achievement or perceived ability enter into both prediction equations; but, as might be expected, personality measures are more important in predicting Aspirations and external factors slightly more important in predicting the level of success actually expected. The predictors account for 64% of the variance in Aspirations, more than for any other predicted variable. Higher aspirations are associated with higher achievement motivation, lower fear of success, lower social self-esteem, lower femininity, lower perceptions of discrimination against women, higher perceived competence, and higher perceived success relative to others.

Less variance in the Stress/Health measures is accounted for by the predictors. Inclusion of variables from the larger study, such as life stress, Type A behavior pattern, perceptions of the work environment (work overload, etc.), and role strain, probably would increase the accuracy of prediction. With the variables included here, the differences in the variables entered in the prediction equations is of interest. Physical Symptoms are predicted by unmet aspirations and traits relevant to achievement in these traditionally male professions. In contrast, scores on the Anxiety-Depression-Irritation Scale are predicted by variables of a more social nature, low social self-esteem, low femininity (traits related to expressiveness/communion), and high disapproval of one's choice of curriculum by significant others.

The Adjusted R^2 for actual Illnesses is not high, but the prediction equation is a reasonable combination of low performance in one's work (GPA), unfavorable social conditions, and internalized traits. It is not surprising that low masculinity and high fear of success are associated with illness for these women who are preparing for traditionally masculine professions, but it is somewhat surprising that femininity is as strong a predictor as low masculinity. Although some of the predictors of Doctor Visits are readily interpretable in terms of stress, two of the strongest predictors, low fear of success and low disapproval, are not. Visits to a medical facility probably reflect many individual differences besides illness. Likewise, the rating of Stress associated with one's work as a student seems to reflect pushing oneself hard as well as feeling unsuccessful in some ways; thus, high expectation of future success, high GPA, high masculinity, low perceptions of current success, and low social self-esteem all are strong predictors. Administration of a revised questionnaire to a larger sample will help to clarify these relationships.

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